

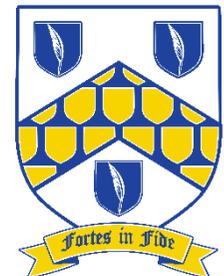
# St Teresa's Catholic Primary School Multiplication and Division Progression Map

*Respect – Resilience – Read – Retain*

***'Do the little things well'***



St Teresa's Catholic Primary School



### MULTIPLICATION & DIVISION FACTS

| Year 1                                                                             | Year 2                                                                                                                                 | Year 3                                                                                    | Year 4                                                                                  | Year 5                                                                                                                            | Year 6                                                                                                                 |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| count in multiples of twos, fives and tens<br>(copied from Number and Place Value) | count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward<br>(copied from Number and Place Value)         | count from 0 in multiples of 4, 8, 50 and 100<br>(copied from Number and Place Value)     | count in multiples of 6, 7, 9, 25 and 1 000<br>(copied from Number and Place Value)     | count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000<br>(copied from Number and Place Value) |                                                                                                                        |
|                                                                                    | recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers | recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables | recall multiplication and division facts for multiplication tables up to $12 \times 12$ | recall multiplication and division facts for multiplication tables up to $12 \times 12$<br>(Consolidation from Year 4)            | recall multiplication and division facts for multiplication tables up to $12 \times 12$<br>(Consolidation from Year 4) |

### MENTAL CALCULATION

|  |                                                                                                                             |                                                                                                                                                                                                                                                                               |                                                                                                                                                                |                                                                                    |                                                                                                                                                                               |
|--|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                                                                                                                             | write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Written Methods) | use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers | multiply and divide numbers mentally drawing upon known facts                      | perform mental calculations, including with mixed operations and large numbers<br>(Children to be taught when to use a mental or written method depending on the calculation) |
|  | show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot | show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot<br>(Consolidation from Year 2)                                                                                                                    | recognise and use factor pairs and commutativity in mental calculations (appears also in Properties of Numbers)                                                | multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 | associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$ )<br>(copied from Fractions)             |

**WRITTEN CALCULATION**

| Year 1 | Year 2                                                                                                                                                                                                                                  | Year 3                                                                                                                                                                                                                                                                              | Year 4                                                                                              | Year 5                                                                                                                                                              | Year 6                                                                                                                                                                                                                                                                                                                                                                          |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | <p>calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (<math>=</math>) signs</p> | <p>write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Mental Methods)</p> | <p>multiply two-digit and three-digit numbers by a one-digit number using formal written layout</p> | <p>multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers</p>             | <p>multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</p>                                                                                                                                                                                                                                           |
|        |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                     |                                                                                                     | <p>divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context</p> | <p>divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</p> |
|        |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                     |                                                                                                     |                                                                                                                                                                     | <p><i>use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))</i></p>                                                                                                                                                                                                                                  |

**PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS**

| Year 1 | Year 2 | Year 3 | Year 4                                                                             | Year 5                                                                                                                      | Year 6                                                                                                                                                                                                                                                                  |
|--------|--------|--------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |        |        | recognise and use factor pairs and commutativity in mental calculations (repeated) | identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.          | identify common factors, common multiples and prime numbers                                                                                                                                                                                                             |
|        |        |        |                                                                                    | know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers                               | <i>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</i><br>(copied from Fractions)                                                                                                                          |
|        |        |        |                                                                                    | establish whether a number up to 100 is prime and recall prime numbers up to 19                                             |                                                                                                                                                                                                                                                                         |
|        |        |        |                                                                                    | recognise and use square numbers and cube numbers, and the notation for squared ( <sup>2</sup> ) and cubed ( <sup>3</sup> ) | <i>calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units such as mm<sup>3</sup> and km<sup>3</sup></i><br>(copied from Measures) |

**ORDER OF OPERATIONS**

| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6                                                                                                 |
|--------|--------|--------|--------|--------|--------------------------------------------------------------------------------------------------------|
|        |        |        |        |        | use their knowledge of the order of operations to carry out calculations involving the four operations |

**INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS**

|  |  |                                                                                                                                   |                                                                                                                        |                                                                                                                                                              |                                                                                                                |
|--|--|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
|  |  | <i>estimate the answer to a calculation and use inverse operations to check answers</i><br>(copied from Addition and Subtraction) | <i>estimate and use inverse operations to check answers to a calculation</i><br>(copied from Addition and Subtraction) | <i>estimate and use inverse operations to check answers to a calculation</i><br>(copied from Addition and Subtraction)<br><b>(Consolidation from Year 4)</b> | use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy |
|--|--|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|

**PROBLEM SOLVING**

| <b>Year 1</b>                                                                                                                                                                                                  | <b>Year 2</b>                                                                                                                                                                                                                | <b>Year 3</b>                                                                                                                                                                                                                                      | <b>Year 4</b>                                                                                                                                                                                                                                                                   | <b>Year 5</b>                                                                                                                                                  | <b>Year 6</b>                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| solve one-step problems involving multiplication and division, by calculating the answer <b>first</b> using concrete objects, <b>then</b> pictorial representations and arrays with the support of the teacher | solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts <b>and previous years learning</b> . | solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which objects are connected to m objects <b>and previous years learning</b> . | solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects <b>and previous years learning</b> . | solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes                               | solve problems involving addition, subtraction, multiplication and division                                                          |
|                                                                                                                                                                                                                |                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                 | solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign |                                                                                                                                      |
|                                                                                                                                                                                                                |                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                 | solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates                                | <i>solve problems involving similar shapes where the scale factor is known or can be found</i><br>(copied from Ratio and Proportion) |

